UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

29 MAR 2004

ENFORCEMENT ACTION MEMORANDUM

SUBJECT: Request for Removal Action at the Armour Road Site
North Kansas City, Clay County, Missouri

FROM: David P. Williams, On-Scene Coordinator
Enforcement/Fund-Lead Removal Branch

THRU: Kenneth S. Buchholz, Chief
Enforcement/Fund-Lead Removal Branch

TO: Cecilia Tapia, Director
Superfund Division

SITE ID#:	WS
CERCLIS ID#:	MOD046750253
NATIONALLY SIGNIFICANT:	No
CATEGORY OF REMOVAL:	Non-time-critical

I. PURPOSE

The purpose of this Enforcement Action Memorandum is to request and document approval of the proposed enforcement-lead removal action for the Armour Road Site (Site), located in North Kansas City, Clay County, Missouri. The general objectives of the action are to: (1) reduce potential exposures that exceed defined risk levels due to human contact with surface soils which contain hazardous substances; and (2) minimize the potential for future off-site migration of hazardous substances by reducing the mass of hazardous substances in the Site soils.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Removal Site Evaluation

Reade Manufacturing, now known as Reactive Metals & Alloys Corp. (REMACOR), owned and conducted an herbicide blending/formulating operation which utilized arsenic and other hazardous substances at the Site during the period 1942-63. U.S. Borax, Inc. (Borax), leased the Site from REMACOR during the period 1963-68 and conducted a herbicide blending/formulating operation at the Site similar to that conducted by REMACOR. Habco, Inc.,

acquired the Site in 1968 and during the period 1968-86 it too conducted a herbicide blending/formulating operation at the Site similar to that conducted by REMACOR and Borax. In 1986 K.C. 1986 Limited Partnership (K.C. 1986), an entity affiliated with Habco, Inc., acquired title to the Site. The Site has apparently not been in active operation since 1986.

In 1989 Hardee's Food Systems, Inc. acquired a leasehold interest in the Site, and contracted with Terracon Environmental, Inc., for the performance of an environmental assessment of the Site. That assessment indicated the presence of significant soil, groundwater and building contamination on or near the Site. Primary contaminants found included arsenic, 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), and pentachlorophenol (PCP).

On July 18, 1991, the Missouri Department of Natural Resources (MDNR) proposed that the Site be placed on the State's Register of Confirmed Abandoned or Uncontrolled Hazardous Waste Disposal Sites (State Registry). This proposal was appealed on August 15, 1991, by K.C. 1986. In October 1993 the MDNR and K.C. 1986 entered into a Consent Agreement pursuant to which the State agreed to withdraw the proposed State Registry action in consideration of K.C. 1986, among other things, conducting an environmental investigation and remediating contamination at the Site to the satisfaction of the MDNR. While K.C. 1986 conducted a partial Site investigation, it failed to complete the investigation or remediate any contamination at the Site. Accordingly, the MDNR placed the Site on the State Registry on May 22, 1997.

The MDNR performed sampling at the Site in January 1996 and released a report entitled "Expanded Site Inspection Sampling Report," dated February 22-23, 1996. Results of this sampling indicated the presence of arsenic in soils at the Site at levels up to 54,900 milligrams per kilogram (mg/kg), 2,4-D at levels up to 7 mg/kg, 2,4,5-T at levels up to 84 mg/kg, and PCP at levels up to 1.5 mg/kg.

In 1996 the Site was referred to the U.S. Environmental Protection Agency (EPA) Region 7 by the MDNR. The EPA conducted sampling at the Site in May 1996 analyzing for arsenic in near-surface soils (0-6 inch depth). Results of this sampling indicated the presence of arsenic at levels as high as 121,000 mg/kg. In May 1996 the EPA initiated a time-critical removal action at the Site to reduce or eliminate human exposure to arsenic-contaminated soils at the Site through the exposure routes of ingestion, inhalation, and dermal contact. Approximately 7,500 square yards of polypropylene geofabric and 340 tons of crushed rock were placed on top of soils contaminated at levels above 200 mg/kg arsenic. In addition, a security fence was placed on the southern and eastern portions of the Site to limit access. Additional gravel was placed on the Site by the EPA in the summer of 2000 to maintain the cover and protectiveness of this response action.

In mid-1996 the EPA sent letters to Borax, REMACOR, and K.C. 1986 notifying them of their potential liability for Site cleanup. These notice letters also requested that each recipient enter into an Administrative Order on Consent to investigate the scope of contamination at the

Site. In December 1996 the EPA and Borax entered into an Administrative Order on Consent for the performance by Borax of an engineering evaluation/cost analysis (EE/CA) at the Site. This Administrative Order on Consent bears the EPA Docket Number VII-97-F-0005. On June 30, 1999, the Administrative Order on Consent was amended by the EPA and Borax to provide for the performance of a treatability study.

On October 14, 1998, the U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry (ATSDR) issued a Public Health Assessment for the Site. Considering the exposure pathways, and the high levels of contamination (especially arsenic), the Site was classified by the ATSDR as posing an Urgent Public Health Hazard.

On January 19, 1999, the Site was proposed for inclusion on the National Priorities List (NPL), 40 C.F.R. Part 300, Appendix B. By Final Rule published at 64 Fed. Reg. 24949, the Site was included on the NPL on June 9, 1999.

Several sampling events were conducted by Borax from 1997 through 2001. Information from these sampling events was used primarily to support conclusions and determinations in the EE/CA. The sampling events conducted by Borax, as well as sampling events conducted by previous parties, can generally be summarized as follows:

- **Soil** - Soil sampling has consistently shown the presence of several inorganic and organic compounds above background levels at the Site. To date, however, arsenic is the contaminant which has proven to be the most widespread as well as posing the most significant health threat. Arsenic concentrations have been detected at levels as high as 121,000 mg/kg, and have typically ranged from several hundred to several thousand mg/kg. These levels have been seen at depths ranging from ground surface to approximately 15-20 feet below ground surface. In addition, 2,4-D, 2,4,5-T and PCP have routinely been detected in the soil analyses, in much lower average concentrations than arsenic. Other contaminants have been detected, but concentrations have generally been low.

- **Groundwater** - Groundwater sampling results have generally been consistent with the soil sampling data with the highest contaminant concentrations being arsenic (30,908 milligrams per liter ("mg/l")), 2-4-D (94 mg/l), 2,4,5-T (320 mg/l), and PCP (8,062 mg/l).

- **Building** - Concrete samples and wipe samples taken from the former blending building located on-site have indicated the presence of arsenic at 1,480 mg/kg and 171 ug/100 cm2, respectively.

In March 2002 Borax submitted an EE/CA to the EPA and the MDNR for review and approval. The EE/CA evaluated alternatives for responding to the presence of certain hazardous substances in Site soils. In accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the EPA published notice of the release of the EE/CA in *The Kansas City Star*, a major newspaper of general circulation in the Kansas City metropolitan area on March 13, 2002. The EPA provided to the public a 30-day opportunity for submitting written and oral comments to the EPA on the response alternatives set forth in the EE/CA. No substantive comments were submitted.

On May 16, 2002, the EPA selected Multi Media Alternative 5, which involves the demolition and off-site disposal of on-site structures, the excavation and off-site disposal of contaminated soils, and the placement of clean fill at the Site, as the response action to be implemented to address contaminated Site structures and soils. The MDNR concurred on this selection.

2. Physical Location

The Site is located at 2251 Armour Road, North Kansas City, Clay County, Missouri. The nearest major highway cross-street is Interstate 29/35, which is 1/4 mile to the west. The Site is located south of Armour Road (also known as Highway 210) and is found in Township 50 North, Range 33 West, Section 13 on the 7.5 Minute Series North Kansas City U.S. Geological Survey Quadrangle topographical map. The Site is located in the southeast quarter of the southwest quarter of the northeast quarter of Section 13.

3. Site Characteristics

The Site is comprised of approximately 1.8 acres and includes property owned or controlled by various entities including K.C. 1986, the City of North Kansas City, and the Burlington Northern and Santa Fe Railway Company. A herbicide blending facility was operated on the largest portion of the Site and includes an approximate 25,000 square foot building that was constructed by Habco between 1975 and 1978.

The Site is generally flat and is substantially covered with either asphalt, concrete, or the building. One railroad spur runs onto the Site from the south, entering the building through the south end, and a second rail spur runs north along the west side of the building. South of the building is a 10- to 15-foot deep ditch with a storm sewer inlet. The Site is secured by a chain link fence along the north, east, and south boundaries. The Site's west boundary abuts a building currently owned by the City of North Kansas City, and occupied as a Sutherland's Lumber retail facility.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Arsenic, 2,4,5-T, 2,4-D, and PCP are present in Site soil and groundwater. These compounds are listed as hazardous substances pursuant to 40 C.F.R. § 302.4. As such, they are "hazardous substances" as defined in Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 (14).

5. NPL Status

On January 19, 1999, the Site was proposed for inclusion on the NPL. By Final Rule published at 64 Fed. Reg. 24949, the Site was included on the NPL on June 9, 1999.

6. Maps, Pictures, and other Graphic Representations

The following are included as attachments to this Action Memorandum.

- Attachment 1 entitled "Engineering Evaluation/Cost Analysis, 2251 Armour Road Site, North Kansas City, Missouri," dated March 2002.

- Attachment 2 entitled "Response to Comments, Armour Road Superfund Site," is the EPA's response to comments on the EE/CA which were received during the public comment period.

B. Other Actions to Date

1. Previous Actions

Previous actions are summarized in Section II. A above.

2. Current Actions

Current actions by the EPA at the Site include the continued rental of security fence to restrict Site access.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

State actions at the Site have included the preparation of an Expanded Site Inspection Sampling Report (February 1996), review of documents and reports related to this Site, and attendance and participation at public meetings.

2. Potential for Continued State/Local Response

The MDNR is expected to continue to be involved in the monitoring and review of Site activities.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Site conditions pose a significant threat to public health or welfare or the environment which meet the criteria for a response action under 40 C.F.R. § 300.415(b)(2) of the NCP, described as follows:

A. Threats to Public Health or Welfare

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants, or contaminants [40 C.F.R. § 300.415(b)(2)(i)].

  Arsenic and other hazardous substances are present in surface soils (0-2 feet) and building surfaces above health-based risk levels at the Site. The proposed arsenic cleanup standard for surface soils is the background concentration, expected to range from between 5 and 15 mg/kg. Surface soil concentrations for arsenic have routinely been detected at several thousand ppm or greater, with a high of 121,000 mg/kg (12.1 percent). Though Site security measures were initiated during the time-critical removal response conducted by the EPA in 1996, portions of the geofabric and gravel "cap" are showing signs of wear and degradation. In addition, the security fence has occasionally shown signs of illegal entry, as evidenced by broken locks and fence sections. Finally, the exclusion of animals or the "food chain" to the Site is nearly impossible; the impacts to these is uncertain, but represents a potential exposure.

- Actual or potential contamination of drinking water supplies or sensitive ecosystems [40 C.F.R. § 300.415(b)(2)(ii)].

  Arsenic has been detected down-gradient of the Site, in an aquifer considered to be a potential drinking water supply. A ground water value assessment of the aquifer down-gradient of the Site, performed by the EPA and the MDNR in 1998, concluded that "[a]lthough there are currently no existing wells using ground water for drinking between the site and the river, this aquifer and this contamination are nonetheless quite significant. If one of the municipal well fields in the greater Kansas City area were lost, or if another source of ground water were needed as a source of

municipal drinking water or as process water, this aquifer would be one of only a few such sources in Kansas City. As such, this aquifer is of greater value, and warrants a higher degree of protection than many other aquifers because of its yield and quality."

- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate [40 C.F.R. § 300.415(b)(2)(iv)].

  High levels of arsenic in surface and subsurface soils will continue to migrate into the underlying aquifer due to a number of factors, including precipitation events and a fluctuating groundwater table.

B. Threats to the Environment

- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released [40 C.F.R. § 300.415(b)(2)(v)].

  Precipitation events are expected to contribute to future releases at the site. This is due to the effects of the additional hydraulic head that may be formed on site soils following precipitation events, exacerbating the effect of contaminant migration and transport.

IV. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description

On-site Building - The on-site building will be demolished and the debris disposed at a Subtitle D landfill. This will include the demolition of the above-ground structure and the excavation, to the extent possible, of below-ground structures. The amount of building debris to be removed is estimated at between 2,500-3,800 cubic-yards.

Contaminated Soil - The proposed action for the contaminated soil is excavation, treatment where applicable, and off-site disposal at a Subtitle D landfill. The general objective of the excavation will be to remove as much arsenic mass from the Site as is practicable (the conceptual excavation plan is visually presented on Figure 6-1 of the attached EE/CA). This will be accomplished, vertically, through excavation from the ground surface to the clay/sand interface, a depth which averages approximately 18 feet. Horizontally, the excavation will proceed to the boundaries approximated in Figure 6-1, but will include a 1:1 slope from such boundaries. This excavation will result in a removal of approximately 47,000 cubic-yards of

soil, which includes the removal of an estimated 320,000 pounds (160 tons) of pure arsenic. An estimated 87 percent of the total arsenic mass will be removed during this action.

2. Cleanup Goals

A streamlined risk assessment was conducted and is discussed in the attached EE/CA. This risk assessment was reviewed and approved by a toxicologist for the EPA Region 7. Based upon information presented in the risk assessment, the following cleanup goals are proposed for site soils:

(NOTE: Although other hazardous substances are present at the Site, they have been detected at trace or low concentrations. The removal of arsenic-containing soils/materials will result in the removal of most, if not all, of the other hazardous substances present at the Site. For these reasons, the only proposed cleanup goals are arsenic-related)

- For surface soils (0-5 feet), the cleanup goal is background concentration for arsenic. A study will be performed to determine background concentrations of arsenic in the area.

- For subsurface soils (greater than 5 feet), the cleanup goal is background concentration, except in those areas along the perimeter of the Site that are needed to stabilize the sidewalls of the excavation. For these sidewall areas, a target cleanup goal of 663 mg/kg is proposed, which corresponds to a "Utility Worker" scenario described in the streamlined risk assessment in the EE/CA.

3. Contribution to Remedial Performance

In the event that future remedial action at the Site becomes necessary, this action is expected to be consistent with such action, to the extent practicable.

4. Description of Alternative Technologies

Removal action alternatives for site soils evaluated in the EE/CA include: No Further Action; Containment; Immobilization; Excavation and Off-site Disposal; and Electrokinetic Remediation.

Removal action alternatives for the on-site building evaluated in the EE/CA include: No Further Action; Decontamination; and Demolition and Disposal.

Discussion of each of these alternatives is contained in the attached EE/CA.

5. Engineering Evaluation/Cost Analysis

An EE/CA was completed for the Site in March 2002 and was made available for public comment during the period of March 11, 2002, to April 11, 2002. The EPA received comments from one entity. The EPA's "Response to Comments" is included as Attachment 2.

6. Applicable or Relevant and Appropriate Requirements (ARARS)

Federal

The following table summarizes Federal ARARs identified for this action.

Action/Prerequisite	Requirement	Citation
Hazardous waste determination	Definition and identification of hazardous waste	40 C.F.R. § 261.20-33
Hazardous materials transportation	Identification of requirements for transporting potential hazardous materials	49 C.F.R. Parts 171-179
Off-Site Rule	Requires that hazardous substances, pollutants or contaminants transferred off-site for treatment, storage or disposal be transferred to a facility in compliance with all applicable state and federal requirements	40 C.F.R. § 300.440

Discussion of Federal ARARs

The MDNR issued a memorandum in February 2001 which made several determinations with respect to potential Resource Conservation and Recovery Act (RCRA) listed wastes at the Site (a copy of the memorandum signed by Cindy Kemper, Director of the MDNR Hazardous Waste Program, dated February 16, 2001, is included in the administrative record for the Site). In this memorandum, the MDNR determined that soil containing PCP at levels below 1,095 mg/kg would not be considered an F027 hazardous waste; that soil containing 2,4,5-trichlorophenol at concentrations below 17,300 mg/kg would not be considered an F027 hazardous waste; and that soil containing 2,4,6-trichlorophenol at concentrations below 1,946 mg/kg would not be considered an F027 hazardous waste. Data collected from the Site thus far have not indicated the presence of F027 or any other RCRA-listed hazardous wastes at the Site.

Some of the wastes at the Site, however, may exhibit the characteristic of toxicity for arsenic (D004), as set forth at 40 C.F.R. § 261.24. The designation of an Area of Contamination (AOC) at the Site is proposed to facilitate the treatment of soils that exhibit the characteristic of toxicity. The AOC would extend to areas which are contiguous with known areas of contamination at the Site and have shown evidence of previous contamination. The AOC will include the area bounded by the former Payless building to the west, Armour Road highway to the north, Railroad Avenue to the east, and the railway to the south. The EPA's AOC policy was first articulated in the NCP (see 53 Fed. Reg 51444 and 55 Fed. Reg. 8758-8760) and was set forth in more detail in the EPA's March 13, 1996, EPA memorandum entitled "Use of the Area of Contamination Concept During RCRA Cleanups." The AOC policy states that consolidation and *in-situ* treatment of hazardous waste within an AOC does not create a new point of hazardous waste generation for purposes of RCRA. This would allow for the on-site treatment of soils which exhibit the characteristic of toxicity without triggering, among other potential RCRA ARARs, the land disposal restrictions or minimum technology requirements. If an AOC is designated at the Site, the approach outlined in the referenced March 13, 1996, memorandum will be followed.

Once treated (if necessary), soils and other materials shipped off-site would not be RCRA hazardous wastes. However, the requirements found at 49 C.F.R. Parts 171-179 and 40 C.F.R. § 300.440 would apply.

State

The following table summarizes state of Missouri ARARs identified for this action.

Action/Prerequisite	Requirement	Citation
Emission of particulate matter to the ambient air beyond the premises of origin	Missouri Air Quality Standards	10 C.S.R. 10-6.170
Designation of dioxin as hazardous waste when mass threshold has been exceeded	Missouri Waste Disposal Regulations	10 C.S.R. 25-3.260(1)(A)25

Discussion of state of Missouri ARARs

"Fugitive particulate matter emissions" may be generated during excavation activities. Such emissions will be controlled in accordance with 10 C.S.R. 10-6170. Control measures may include the use of dust suppression techniques (keeping sufficient moisture in the excavated soils) and air monitoring to determine if such techniques are effective.

Pursuant to 10 C.S.R. 25-3.260(1)(A)25, whenever any person accumulates one gram of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), that person is subject to the provisions of 10 C.S.R., and the waste is a hazardous waste in the state of Missouri. Consequently, as long as the total quantity of TCDD accumulated from the Site does not equal or exceed one gram, the waste

may be disposed as a special waste in a Missouri Subtitle D landfill. Based upon data collected thus far, the amount of TCDD at the site is less than one gram, and would therefore not be considered a hazardous waste in the state of Missouri.

7. Project Schedule

Primary on-site activities are estimated to take 9-12 months to complete. A detailed schedule for the work will be developed in a design/construction work plan.

B. Estimated Costs

This action is expected to be performed and/or financed by certain of the potentially responsible parties. The estimated cost of the action is approximately $6,990,000.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will result in increased public health and environmental risks as discussed in Section III above.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

See attached Enforcement Addendum.

IX. RECOMMENDATION

This decision document represents the selected non-time-critical removal action for the Armour Road Site, North Kansas City, Clay County, Missouri, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. The decision is based upon the administrative record for the Site.

Conditions at the Site meet the criteria set forth at 40 C.F.R. § 300.415(b)(2) for a removal action, and I recommend your approval of the proposed removal action.

Approved

Cecilia Tapia, Director
Superfund Division, Region 7

Date 3/29/04

Disapproved

Cecilia Tapia, Director
Superfund Division, Region VII

Date

Attachments